April 15, 2003

10 CFR 50.55a

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of) Docket No. 50-327
Tennessee Valley Authority)

SEQUOYAH NUCLEAR PLANT (SQN) UNIT 1 – REQUEST FOR RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME), SECTION XI CODE REQUIREMENTS - TESTS FOLLOWING REPAIR, MODIFICATION, OR REPLACEMENT (IWE-5221)

Pursuant to 10 CFR 50.55a(a)(3)(i), TVA is requesting relief from the IWE-5221 requirements in Section XI of the ASME Boiler and Pressure Vessel Code. TVA's IWE Program is based on the 1992 Edition of the ASME Code. TVA's enclosed request for relief proposes alternative test methods (pneumatic leakage test) for repair activities associated with the SQN steel containment vessel following the Unit 1 Cycle 12 steam generator replacement outage.

Following a recent discussion with your staff regarding Technical Specification Change 02-07, TVA understands that NRC staff position considers applicable leakage testing for Class MC components following major repair of the steel containment vessel to be in accordance with 10 CFR 50, Appendix J and that the pneumatic leakage test be classified as a Type A test rather than a Type B test. Based on the staff's position, TVA is submitting the enclosed relief request. It may be noted that this relief request is similar to the relief request approved for North Anna Power Station by letter dated January 14, 2003.

To support the ongoing steam generator replacement project and the scheduled restart of Sequoyah Unit 1 in June 2003, TVA requests approval of the proposed alternative prior to entry into Mode 4 (currently scheduled as May 27, 2003).

There are no commitments contained in this letter. This letter is being sent in accordance with NRC RIS 2001-05. If you have any questions about this change, please telephone me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,

Original signed by Jim Smith

Pedro Salas
Licensing and Industry Affairs Manager

Enclosure
cc (Enclosure):
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ENCLOSURE

SEQUOYAH NUCLEAR PLANT (SQN)
UNIT 1
AMERICAN SOCIETY OR MECHANICAL ENGINEERS (ASME) CODE RELIEF REQUEST

Summary: SQN seeks relief from ASME Section XI, Subsection IWE with respect to testing the steel containment vessel. SQN is replacing the steam generators (SGs) which necessitates cutting two holes in the steel containment vessel in order to replace the SGs. SQN plans to perform a local leak rate test (Type B test) concurrent with a pressure test at P_a in lieu of the integrated leak rate test (Type A test).

TVA requests authorization to use this alternative in accordance with 10 CFR 50.55a (a)(3)(i).

Unit: 1

System: Containment Isolation System

ASME Section XI Code Class: MC

Code Requirement: ASME Section XI 1992 Edition with the 1992 Addenda, Subsection IWE

Code Requirements From Which Relief is Requested: An alternative to the requirement of Paragraph IWE-5221 is requested.

Paragraph IWE-5221 states in part:

"Except as noted in IWE-5222, repairs or modifications to the pressure retaining boundary or replacement of Class MC or Class CC components shall be subjected to a pneumatic leakage test in accordance with the provisions of Title 10, Part 50 of the Code of Federal Regulations, Appendix J, Paragraph IV.A, which states in part that 'any major modification, replacement of a

component which is part of the primary reactor containment boundary, or resealing a seal welded door, performed after the preoperational leakage rate test shall be followed by a either a Type A, Type B, or Type C test as applicable for the area affected by the modification.'"

Basis for Relief:

To facilitate the SQN Unit 1 SG replacement, SQN's free-standing steel containment vessel (SCV) will be breached. This work must be performed in order to remove the SGs from containment. The purpose of this relief request is to propose that a local leak rate test be performed on the new pressure boundary welds of the SCV as an alternative to a Type A test, which is specified in the Code.

The sections of the SCV that were removed will be rewelded in place by qualified personnel in accordance with the owner's code of record requirements. The code of record for the SCV is ASME Section III, 1968 Edition through the Winter 1968 Addenda. Consistent with the owner's code of record requirements, examinations will be performed on the steel vessel repair welds. As a minimum, a magnetic particle test of the back gouge of the root pass will be performed and 100% radiography will be performed on the pressure boundary containment SCV final repair welds. In addition, ASME Section XI requires both a General Visual and a Visual Test-3 visual examination of the SCV pressure boundary welds. These are preservice examinations. The SCV repair welds will be tested by a local leakage/pressure test by pressurizing the containment vessel to the required test pressure of at least P_a (12.0 pounds per square inch gauge [psig]) and performing a bubble test of the repair welds after a hold time of at least 10 minutes. The test pressure will be held between 12.2 psig and 12.5 psig. Pressurizing containment to P_a will structurally test the SCV repair weld. Zero detectable leakage is the acceptance criterion. This is determined by the absence of bubble formation. Any leakage identified will be corrected and the test will be performed again. The SCV will be pressurized through an existing penetration using an external air compressor. It takes approximately 4 hours to pressurize the SCV to the test pressure. Once attaining test pressure, the pressure will be held for 10 minutes before and during the bubble testing and visual examination. It will take approximately 1-2 hours to perform the

bubble test and visual examination. After the bubble test and visual examination is completed, the SCV will be depressurized in a controlled manner which takes approximately 2-4 hours. Qualified personnel will conduct all examinations. The combination of the 100% radiography, which will show that the repair welds meet the construction code radiography acceptance criteria and the local leak rate test of the repair welds by performing the bubble test while the SCV and repair welds are at accident pressure, are more than adequate to prove the integrity of the steel containment vessel.

Impractical Requirement: Performance of an integrated leak rate test provides no additional assurance of containment integrity following the repair of the containment vessel. The integrated leak rate test does provide assurance of overall containment integrity. However, the integrated leak rate test requires additional schedule time, manpower, and dose and test instrumentation to be installed throughout containment. The integrated leak rate test takes longer to perform and virtually stops all other work from taking place inside of containment for several days. The integrated leak rate test does not provide any additional assurance of the quality of the repair welds of the containment vessel.

Justification for the Alternative: ASME Section XI, Paragraph IWE-5221 requires that an appropriate 10 CFR 50, Appendix J test be performed following a repair or modification of the pressure retaining boundary. Specifically, the Code requires a Type A, Type B, or Type C test, as appropriate, for the repaired or modified pressure boundary component.

Appendix J, Option B provides guidelines for meeting the safety objectives of the Appendix J requirements. Section 9.2.4 of NEI 94-01, states that "repairs and modifications that affect the containment leakage rate require leak rate testing (Type A testing or local leak rate testing) prior to returning the containment to operation."

A local leak rate test provides the most accurate and direct method of assuring the leak tight integrity of the repair welds. The local leak rate test is

considered a superior test for determining leakage at the repaired area as compared to a Type A test. The local leak rate test will directly quantify the leakage at the repair area, while a Type A test measures total containment leakage. This test is being performed to reestablish the leak-tight integrity of the SCV due to the repair welds. Also, SQN's acceptance criterion for leakage of the repair welds will be zero leakage. This acceptance criterion is a more stringent criterion than that of a Type A test. Therefore, if there is any leakage of the SCV at the repair welds, it would be identified by the local leak rate test, and corrected.

Additionally, the containment pressure test, performed at P_a, will reestablish the structural integrity of the SCV. Therefore, the required pressure test at P_a and the local leak rate test of the SCV repair welds satisfy or exceed the intent of a Type A test to establish containment integrity after a repair activity.

SQN has determined that a local leak rate test is the most appropriate test to perform on the SCV to meet the testing requirements of the Code. A Type A test is a less sensitive test than a local leak rate test. SQN considers that the local leak rate test, in conjunction with the planned containment pressure test, will continue to provide for an acceptable level of quality and safety.

Alternative Requirement: In accordance with 10 CFR 50.55a(a)(3)(i), SQN requests an alternative to the SCV test requirement of ASME Section XI, Paragraph IWE-5221 to reestablish the leak-tight integrity of the SCV. SQN proposes to perform an "as-left" local leak rate test on the SCV repair welds in lieu of the Type A test specified by ASME Section XI, Paragraph IWE-5221 for this type of repair activity. The local leak rate test will be performed concurrent with the containment pressure test.